

Numerical Propulsion System Simulation (NPSS) Version 1



2001 NASA Software of the Year Winner
2001 NASA Turning Goals Into Reality Goal Award Winner

TECHNOLOGY

NPSS V1 is a world-class propulsion system simulation tool that provides the user with unprecedented capability, levels of interoperability, and ease of use. It is an emerging U.S. standard for aerospace simulations.

COMMERCIAL APPLICATION

- ◆ Unique Plug 'n Play Object Oriented Architecture Enables: Multi-Fidelity Analysis & Multi-Discipline Simulation; Increase Modeling Flexibility & Resolution of System Model; Protect Company Proprietary Code and Data; Distributed Collaborative Engineering
- ◆ NPSS V1 offers key technological advances in designing aircraft engines and enhancing the U.S. aerospace industry's competitiveness.

SOCIAL / ECONOMIC BENEFIT

Currently, the average development cost for an engine is \$1 billion in the U.S. industry. The time-to-market is three to five years for a commercial engine and 10 years for a military engine. Using NPSS, one partner estimates a 55% reduction in the time to perform engine system simulation throughout the product life cycle. This translates into an annual savings to the U.S. aircraft industry of over \$50M/year from increased productivity. The reduced risk translates into increased safety for aeronautics and the human exploration of space.

NPSS PARTNERS

General Electric Aircraft Engines, Pratt & Whitney, The Boeing Company, Honeywell, Rolls-Royce Corporation, Williams International, Teledyne Continental Motors-Turbine Engines, Arnold Engineering Development Center, Wright Patterson Air Force Base, and NASA Glenn Research Center



Anything that needs to be simulated can be modeled by writing the needed components and using the NPSS architecture.

NASA and PARTNER USAGE

NPSS V1 is being used by NASA and partners in industry, government, & academia, including: Joint Strike Fighter Program, Ultra-Efficient Engine Technology, Engine Alliance, General Electric Aircraft Engines, Pratt & Whitney, Williams-International, Georgia Institute of Technology, Modern Technologies Corporation, NASA GRC Propulsion Systems Analysis Office, and Arnold Engineering Development Center of Department of Defense.

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